DOCUMENT RESUME

ED 095 549 CS 201 497

AUTHOR Cooper, Thomas C.
TITLE Measuring Second Language Acquisition. Studies in Language Education, No. 6.
INSTITUTION Georgia Univ., Athens. Dept. of Language Education.
PUB DATE Dec 73
NOTE 29p.

EDRS PRICE MF-$0.75 HC-$1.85 PLUS POSTAGE
DESCRIPTORS English; *German; Higher Education; Language Development; *Language Research; Language Skills; *Measurement Techniques; Secondary Education; *Second Language Learning; Syntax; *Transformation Generative Grammar; Writing Skills; Written Language

ABSTRACT

This research project was designed to analyze by quantitative methods a corpus of writing produced by four groups of American college students enrolled in German courses and by one group of professional German writers. Analysis was undertaken in order to determine whether or not significant quantitative differences in the use of selected syntactic structures exist between the American students and the German writers and to test the validity of the Hunt method of measuring syntactic maturity when applied to the writing of second language learners and native Germans. Findings of the study indicated that developmental stages in the acquisition of written German syntax did exist and that these stages were clearly definable between every other level; similarity of developmental stages was present in so far as the second language learners attained a comparable level of syntactic growth reached by representative English speakers; syntactic maturity consists of the writer's ability to pack more information into sentences and T-units by lengthening independent clauses and by using more subordination; and modified sentence-combining practice might prove to be an interesting way of hastening syntactic development in German. (RB)

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Measuring Second Language Acquisition

By
Thomas C. Cooper

Studies in Language Education, Report No. 6
Department of Language Education, The University of Georgia
Athens, Georgia

December, 1973

CS 201 497

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Thomas C. Cooper
Foreign Language Education
University of Georgia
Athens, Georgia

MEASURING SECOND LANGUAGE ACQUISITION

Introduction

Research conducted during the last decade in the field of child language has offered substantial evidence that children progress through a series of developmental stages as they acquire the ability to manipulate the syntax of spoken English.[1] This evidence has in turn caused attention to be focused on the nature of second language learning, for several recent studies offer evidence that second language learners also acquire the syntax of the target language in developmental stages. Furthermore, these stages have been shown to be in many ways similar to the stages found to be characteristic of the primary language learner's progress.

In an article on the acquisition of English in a second language environment, Roar Ravem analyzed by the use of transformational grammar rules negative and interrogative sentences produced by his six-year-old Norwegian son, Rune, during a two month period.[2] Special attention was paid to the boy's acquisition of do as a tense marker. Recordings of performance data were taken at four different times. Briefly, Ravem discovered that his son progressed through a series of developmental stages in his learning of English negative and interrogative constructions. Although Ravem indicates that his son's linguistic development in English was greatly facilitaged by competence in his first

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language, Norwegian, he writes:

> What is perhaps more striking is the extent to which second language acquisition in an environment where no formal instruction is given seems to be a creative process not unlike that of first language acquisition. The similarities between Rune and L1 learners in the developmental sequence of negative and interrogative sentences are in many ways more revealing than the differences.[3]

Donald E. Thornhill conducted a more extensive study of developmental stages in second language acquisition.[4] His subjects consisted of four Spanish adults living in the second language environment, each of whom had studied English formally in Columbia for periods of one to three years. Each was interviewed eight times during a nine week period. At each interview, the students responded in English "to a set of ten questions about their home towns, their experiences in Tallahassee, and anything of special interest to them."[5] The questions were the same for the eight interview sessions. In addition, oral responses to pictures were elicited. All responses were recorded on tape and then analyzed for the amount and type of sentence embedding.

Two of Thornhill's general conclusions are quoted below:

1. The data collected and analyzed in the present study indicate that that there is indeed a development toward linguistic maturity as shown by the increase in the incidence of certain grammatical elements, decrements in the incidence

of other elements, and changes in incidence of grammatical structures through the eight interviews.

2. The trends in the language behavior of these second language learners suggest remarkable parallels with that reported by other investigators of the first language behavior of school children.[6]

Thus, Thornhill's work offers further evidence that developmental stages in second language acquisition do exist and that these stages are similar to those through which native language learners progress.

Thomas C. Cooper and Lena Madison conducted a smaller scale pilot study that was similar to Thornhill's in that it also concentrated on the syntactic development of second language learners.[7] Nineteen writing samples were collected from three groups of college students, with each group representing a particular level with respect to the college curriculum at Florida State University. The corpus of writing was analyzed by techniques employed by Kellogg W. Hunt. Although these techniques will be discussed below, the findings of this study, generally speaking, agreed substantially with those of Ravem and Thornhill: second language learning seems to be characterized by developmental stages that are somewhat similar to those of primary language learners.

Hunt's Research

Hunt reported the findings of a study on freely produced

language of pupils in grades four, eight, and twelve.[8] Since his methods of analysis seem to hold promise for studies in second language learning, a brief summary of his procedures will serve as a bridge to the project to be reported on below.

Hunt selected nine boys and nine girls of average IQ from each of three grades. Each student in the course of the semester submitted 1000 words of writing. The subject matter of the compositions was not controlled. The writing samples were then analyzed in two ways: first, Hunt measured quantitatively the relationship of subordinate and main clauses to each other and to sentences; secondly, he measured by the application of transformational grammar analysis the relationship of selected embedding transformations to clauses and sentences. Hunt was primarily interested in tracing what he termed the development of syntactic maturity among native speakers of English. In addition to examining writing samples from fourth, eighth, and twelfth grade students, Hunt also analyzed samples written by professional writers who had published in Harpers and The Atlantic.

Before summarizing Hunt's conclusions, it is necessary to discuss one important analysis technique that he developed. Hunt tried to find a dependable and consistent way of segmenting student compositions; and he finally adopted the technique of dividing bodies of writing into what he identified as "minimal terminal syntactic unity" (T-units in abbreviated form).

He defines this unit of measurement as follows:

> They /T-units/ are terminable in the sense that it is grammatically acceptable to terminate each

> one with a capital letter at the beginning and a period or question mark at the end. They are 'minimal' in the sense that they are the shortest units into which a piece of discourse can be cut without leaving any sentence fragments as residue ...each is exactly one main clause plus whatever subordinate clauses are attached to that main clause.[9]

Hunt concluded that the average length of the T-unit correlates closely with the maturity of the writer: the average T-unit gets longer as the writer matures. There are two possible ways to account for this increase in length: (1) a writer can add more dependent clauses by adding phrases and words. Both types of lengthening are due to sentence embedding transformations. In the first case a subordinate clause is added producing a multiclause T-unit, while in the second, phrases or subclausal structures which originally were sentences, clauses (or T-units) are embedded in a main T-unit. Hunt reported an increase in both types of lengthening. However, certain distinctions need to be made. With regard to transformations producing a multi-clause T-unit (type one lengthening), the following points were found to be true:

1. Twelfth graders produce more subordinate clauses of every type than fourth graders do.
2. Noun clauses, exclusive of direct discourse nearly double in frequency, but the major increase comes late in the time span.
3. Adjective clauses more than double in frequency,

> and the increase is about even in both halves of the time span.[10]

Some of the important conclusions Hunt reached with regard to T-unit expansion caused by an increase in the number of subclausal elements (type two lengthening) are:

1. The successively older grades tend to use successively larger numbers of almost every kind of modifier of nouns... thus, older students write substantially more genitives, and more prepositional phrases...[11]
2. Due perhaps to constraints of English prose style, a greatly expanded use of subordinate clause additions is limited. The only other way that T-unit length can be increased is by the addition of nonclausal elements; and this seems to be the case with most native writers.

German Acquisition Study

The research project to be discussed below was designed to analyze by quantitative methods a corpus of writing produced by four levels (or groups) of American college students and by one group of professional German writers. Analysis was undertaken in order: a) to determine whether or not significant quantitative differences in the use of selected syntactic structures exist among the five groups; b) to test the validity of the Hunt method of measuring syntactic maturity when applied to the writing of second language learners and native Germans.

The college students had enrolled during the 1970-72 academic years in 200, 300, 400, and 500 level German courses at The Florida State University. Each level contained 10 students; there were 40 students in total. The levels represented composition-conversation and literature courses normally taken by Florida State University students during their sophomore, junior, senior, and graduate school years, respectively. On the basis of information obtained from the registrar, only those students born in the United States were selected. All students of this group were native Americans whose mother tongue was English. All, therefore, were learning German in a second language environment.

The subjects of the second group consisted of 10 German journalists who had written for Die Zeit. These writers were professionals who had developed a high level of facility and skill in handling syntactic patterns of German. Their samples were used for comparative purposes.

From each student in the four levels of the college group, writing samples of 500 words in length were collected. The content of the samples was not specified. Instead, students at each level wrote on a variety of subjects as was determined by the instructors. The samples consisted of themes, papers, and homework assignments produced by the students during the normal course of the academic quarter in which they were enrolled. At the 200 level, the students wrote about situational topics, and they described various events and objects. At the upper levels, they critiqued articles dealing with subjects such as the German language or the Lebensstil of Americans. They analyzed poems,

novellas, and portions of novels. In short, they wrote about literary topics common for most upper level university language courses.

It was hoped that the above conditions would assure that the samples would accurately reflect each student's skill and level of achievement; in brief, his degree of syntactic maturity at the time the writing was produced.

In the second group of subjects, prose samples were randomly selected from 10 articles or editorials in several current issues of Die Zeit. For all 10 writers, the first 500 words were processed.

After the samples had been collected, they were subjected to analysis. First each sample was segmented into minimal terminable units (T-units), which, to reiterate, are main clauses plus any subordination. Five indices were then calculated for each sample. These included (1) average clause length, (2) subordinate clause ratio, (3) average T-unit length, (4) coordinate clause ratio, and (5) average sentence length.

A passage from a 500 level (graduate school) composition is analyzed below as an example.

> Ich glaube, dass sich die meisten Leute dieser Lage nicht bewusst sind, obwohl des Problem uns alle angeht,/und die Hauptschauspieler sind oft Wissenschaftler, die passiv ihre Rollen spielen./ Weil wenige andere sich darum kümmern, kann man nur sagen, dass wir auf unsere eigene Tragikomödie blicken./

This passage consists of 46 words, 2 sentences, 3 T-units (between the virgules), 5 subordinate clauses (underlined), and 8 clauses, both subordinate and main. From these figures one can determine the five indices:

1. Average clause length (words ÷ all clauses, 45 ÷ 8) = 5.8 words per clause.
2. Subordination ratio (all clauses ÷ T-units, 8 ÷ 3) = 2.7 subordinate clauses for every main clause or clauses per T-unit.
3. Average T-unit length (words ÷ T-units, 46 ÷ 3) = 15.3 words per T-unit.
4. Coordination ratio (T-units ÷ sentences, 3 ÷ 2) = 1.5 coordinate clauses per sentence or T-units per sentence.
5. Average sentence length (words ÷ sentences, 46 ÷ 2) = 23 words per sentence.

Table 1 arrays the group means of each of the five indices presented above. Principal findings are described by univariate and multivariate analysis of variance. Beginning at the left and moving downward, the following can be stated:

1. Clause length increases progressively from level to level. Increments significant at the .05 level occur between groups 4 and 5. Otherwise, these increments are significant at two-year intervals.
2. With the exception of graduate students compared to seniors, rate of subordination shows steady increases. Increments between sophomores and juniors, and graduate students and journalists are significant at the .05 and .01 level, respectively.

Table 1

MEANS OF THE FIVE INDICES AND ANALYSIS

Level	Average Clause Length	Subordination Ratio	Average T-Unit Length	Coordination Ratio	Average Sentence Length
200 Level (Sophomores)	7.3	1.2	8.7	1.2	10.3
300 Level (Juniors)	7.4	1.4	10.3	1.2	12.6
400 Level (Seniors)	8.5	1.5	12.5	1.2	15.2
500 Level (Graduates)	9.9	1.4	14.0	1.2	16.9
600 Level (Native Germans)	10.7	1.7	18.4	1.3	23.0
UNIVARIATE ANALYSIS BETWEEN GROUPS (df = 4,45)					
2 vs 3 (F = .10)	N.S. (F = 6.55)	P .05 (F = 1.70)	N.S.	N.S. (F = 1.52)	N.S.
2 vs 4 (F = 4.57)	P .05 (F = 14.45)	P .01 (F = 9.74)	P .01	N.S. (F = 7.01)	P .05
2 vs 5 (F = 20.49)	P .01 (F = 8.80)	P .01 (F = 18.72)	P .01	N.S. (F = 12.58)	P .01
2 vs 6 (F = 35.70)	P .01 (F = 44.62)	P .01 (F = 62.04)	P .01	N.S. (F = 47.12)	P .01
3 vs 4 (F = 3.32)	N.S. (F = 1.54)	N.S. (F = 3.32)	N.S.	N.S. (F = 2.00)	N.S.
3 vs 5 (F = 17.72)	P .01 (F = .16)	N.S. (F = 9.16)	P .01	N.S. (F = 5.36)	P .05
3 vs 6 (F = 32.02)	P .01 (F = 16.97)	P .01 (F = 43.25)	P .01	N.S. (F = 31.72)	P .01
4 vs 5 (F = 5.70)	P .05 (F = .69)	N.S. (F = 1.45)	N.S.	N.S. (F = .81)	N.S.
4 vs 6 (F = 14.72)	P .01 (F = 8.28)	P .01 (F = 22.61)	P .01	N.S. (F = 17.78)	P .01
5 vs 6 (F = 2.10)	N.S. (F = 13.79)	P .01 (F = 12.60)	P .01	N.S. (F = 11.01)	P .01
MULTIVARIATE ANALYSIS OF VARIANCE BETWEEN INDIVIDUAL GROUPS (df = 4,42)					
2 vs 3		F = 4.261		P .01	
2 vs 4		F = 11.040		P .01	
2 vs 5		F = 14.388		P .01	
2 vs 6		F = 23.162		P .01	
3 vs 4		F = 2.025		N.S.	
3 vs 5		F = 5.553		P .01	
3 vs 6		F = 11.399		P .01	
4 vs 5		F = 1.596		N.S.	
4 vs 6		F = 5.297		P .01	
5 vs 6		F = 3.973		P .01	

Otherwise, there is a .01 level of significance between pairs separated by one or more adjacent groups.

3. T-unit lengths show monotonic increases across all five levels, and these increments are significant at the .01 level between the graduate students and the journalists or between any of the two-year intervals.
4. The coordination ratio neither increases steadily nor significantly.
5. Sentence length shows monotonic increases which are significant at the .01 level between pairs separated by two or more years.

The lower portion of Table 1 presents a multivariate description of the findings. In this kind of analysis the means obtained from the five indices are compared together. With regard to adjacent groups, significance at the .01 level was found between levels 2 and 3, and 5 and 6. If one or more levels intervened between pairs, differences were significant at the .01 level.

One of the questions motivating the undertaking of this study was to see if the progress of second language learners is in any way similar to that reported by investigators of primary language acquisition. Such a comparison can only be suggested, for factors such as age and background of subjects was not comparable in all cases.

Table 2 exhibits data from the five indices used in Hunt's

Table 2

MEANS OF THE FIVE INDICES FOR GERMAN STUDY AND FOR HUNT'S STUDY

	Words Per Clause	Clauses Per T-unit	Words Per T-unit	T-Units Per Sentence	Words Per Sentence
200 Level (Sophomores)	7.3	1.2	8.7	1.2	10.3
300 Level (Juniors	7.4	1.4	10.3	1.2	12.6
400 Level (Seniors)	8.5	1.5	12.5	1.2	15.2
500 Level (Graduate Students)	9.9	1.4	14.0	1.2	16.9
600 Level (Native Germans)	10.7	1.7	18.4	1.3	23.0
Grade 4	6.6	1.30	8.6	1.60	13.5
Grade 8	8.1	1.42	11.5	1.37	15.9
Grade 12	8.6	1.68	14.4	1.17	16.9
Professional Writers	11.5	1.74	20.3	1.23	24.7

study and in this study. Hunt had primarily investigated the writing of students from grades 4, 8, and 12. It is interesting to compare developmental trends that have emerged in these two investigations. Regarding words per clause, the 200 and 300 level German students fall in between grades 4 and 8; 400 level students write clauses that almost approach those of grade 12 in length. The graduate students are slightly more than one word per clause ahead of the 12th graders. In the clauses per T-unit column, sophomores begin at a lower level than Hunt's 4th graders; but juniors, seniors, and graduate students fall in between the 8th and 12th grade levels. Column 3 shows that sophomores write slightly longer T-units than 4th graders; juniors use T-units that in length are in between those of 4th and 8th graders.

The data in the column showing T-units per sentence is rather constant in the German study but decreases in Hunt's investigation. A high rate of occurrence of coordination between T-units is apparently a trend that is primarily characteristic of younger children. Rate of words per sentence is, however, quite similar in the two studies. Although sophomores and juniors write fewer than Hunt's 4th graders (this is attributable to the high coordination ratio of the 4th graders), the figures for seniors and graduate students correspond with those of the 8th and 12th grade students. In summary, when compared with native English speakers, the second language learners exhibit more rapid growth in syntactic development and approach or surpass the norms established by Hunt's students.

Table 2 also contains data from the professional groups. Comparison here can be more direct, for both groups of journalists have established themselves in careers which demand a high degreee of writing competency. For the American writers the index scores are 11.5, 1.74, 20.3, 1.23, and 24.7, respectively; the German journalists have scores of 10.7, 1.7, 18.4, 1.3, and 23.0, respectively. These scores are very similar and may indicate the presence of common denominators of stylistic or psychological constraints which are at work in English and German writing behavior.

In the second phase of analysis, attention was focused on grammatical structure occurring in the individual T-units. There were 2150 T-units in total. From this number 500, ten from each subject were randomly selected for detailed analysis. These T-units were typed on a linguistic analysis worksheet and the rate of occurrence of certain syntactic constructions was tabulated for each.

Most of the constructions consisted of two basic or kernel sentences joined together by means of sentence embedding manipulations. For example, in the phrase "es gibt einen grossen Hund da," transformational grammarians would assert that the two underlying sentences which have been combined or embedded into one another are "es gibt einen Hund da" and "er ist gross."

The sentence-embedding constructions were divided into three major categories which are listed below with examples.

Nominal Structures

1. Headed

   A. Noun plus adjective: der grosse Hund

   B. Noun plus possessive: sein Mantel
   der Mantel des Mannes

   C. Noun plus relative clauses: der Mann, der ein Beir trank

   D. Noun plus prepositional phrase: der Wagen unter dem Baum
   das Buch auf dem Tisch

   E. Noun plus participle: das lachende Kind

   F. Noun plus appositive: Elizabeth die Königin

2. Non-headed

   A. Noun clause: er denkt, er hat den Dieb gesehen
   er denkt, dass er den Dieb gesehen hat

   B. Gerund phrase (termed a nominalized infinitive in German grammar) Radfahren ist gut fur das Herz

Adverbial Structures

1. Time: als er fortging
   wenn immer er fortging

2. Place: das Haus, wo sie wohnt

3. Cause: weil er kein Geld hatte

4. Condition: wenn ich Sie wäre

Coordinate Structures

1. Modifiers

   A. Adjectival: frisches, weisses Brot

   B. Adverbial: lief schnell und vorsichtig

2. Nominals: der Mann und die Frau

3. Predicates: er liest und schreibt

In addition to the above sentence embedding constructions, other typical syntactic structures were counted, structures that could be classified as "near" sentence-embeddings. These constructions are listed below according to a classification scheme developed by Lohnes and Strothmann.[12]

1. Modal verbs plus infinitives

2. Second-prong infinitives

   (ich habe ihn kommen sehen)
   (er hat etwas zu tun)

3. End-field infinitives

   (er hat aufgehört, Zigaretten zu rauchen)

Table 3 presents together the means for the major categories of grammatical constructions that were tabulated. Again, principle findings are described by analysis of variance:

1. Selected headed and non-headed nominal structures were tabulated. The sum totals of both categories increased progressively from level to level. Univariate analysis of variance showed that the increments were significant at the .01 level across groups. Between the adjacent groups of 2 and 3, and 4 and 5, increases were significant at the .05 level. If one or more levels intervened between pairs, increases were significant at the .01 level.

2. The totals of adverbials showed a progressive increase across the five levels. These increments, however, were not statistically significant.

Table 3

MEANS AND ANALYSIS OF NOMINAL, ADVERBIAL, COORDINATE, AND DEPENDENT INFINITIVE CONSTRUCTIONS PER SUBJECT SAMPLE

	Nominals	Adverbial	Coordinates	Dependent Infinitives
200 Level	8.1	1.3	4.2	2.1
300 Level	15.5	1.4	2.4	2.5
400 Level	18.9	1.5	2.8	2.6
500 Level	26.2	1.8	4.4	2.8
600 Level	32.6	2.5	7.2	3.6
Univariate Analysis (df = 4,42)				
2 vs 3	(F = 4.87) P .05	N.S.	(F = 1.59)	N.S. N.S.
2 vs 4	(F = 10.38) P .01	N.S.	(F = 1.00)	N.S. N.S.
2 vs 5	(F = 29.15) P .01	N.S.	(F = .02)	N.S. N.S.
2 vs 6	(F = 53.42) P .01	N.S.	(F = 4.41)	P .05 N.S.
3 vs 4	(F = 1.03) N.S.	N.S.	(F = .08)	N.S. N.S.
3 vs 5	(F = 10.19) P .01	N.S.	(F = 1.96)	N.S. N.S.
3 vs 6	(F = 26.02) P .01	N.S.	(F =11.28)	P .01 N.S.
4 vs 5	(F = 4.74) P .05	N.S.	(F = 1.25)	N.S. N.S.
4 vs 6	(F = 16.70) P .01	N.S.	(F = 9.48)	P .01 N.S.
5 vs 6	(F = 3.65) N.S.	N.S.	(F = 3.38)	N.S. N.S.
Multivariate Analysis Between Groups (df = 4,42)				
2 vs 3	F = 2.30		N.S.	
2 vs 4	F = 3.75		P .05	
2 vs 5	F = 8.08		P .01	
2 vs 6	F =14.37		P .01	
3 vs 4	F = .26		N.S.	
3 vs 5	F = 2.58		N.S.	
3 vs 6	F = 7.86		P .01	
4 vs 5	F = 1.23		N.S.	
4 vs 6	F = 5.49		P .01	
5 vs 6	F = 1.69		N.S.	

3. Coordinate structures increased from levels 3 to 6, respectively. The level 2 score was greater than that of 3 and 4. Univariate analysis of variance indicated a .05 level of significance across groups and between groups 2 and 6. A significance level of .01 was discovered between groups 3 and 6, and 4 and 6.
4. Means for all dependent infinitives increased across levels, but not significantly.
5. Multivariate analysis of variance, testing all four structures together, indicated a .01 level of significance across groups and significance at either the .05 or .01 level between every other group.

In Table 4, the totals for nominals, adverbials, coordinates, and dependent infinitives were added. Increases were monotonic. Univariate analysis of variance showed that differences in means were significant at the .01 level between the fourth and fifth groups. The difference between group 5 and 6 proved to be significant at the .05 level. If one or more levels intervened, differences were significant at the .01 level.

As was the case when the five indices were tested, real differences do not exist between all adjacent levels. With second language learners, two years seem to be the minimum time span required for statistically significant acquisition of the tabulated syntactic patterns, at least with current text materials.

SUMMARY

Writing samples were collected from comparable groups. The

Table 4

TOTALS OF NOMINAL, ADVERBIAL, COORDINATE, AND DEPENDENT INFINITIVE CONSTRUCTIONS PER SUBJECT SAMPLE AND ANALYSIS OF TOTALS

	200 Level	300 Level	400 Level	500 Level	600 Level
Nominals	8.1	15.5	18.9	26.2	32.6
Adverbials	1.3	1.4	1.5	1.8	2.5
Coordinates	4.2	2.4	2.8	4.4	7.2
Dependent Infinitives	2.1	2.5	2.6	2.8	3.6
Total	15.7	21.8	25.8	35.2	45.9

Univariate Analysis of Totals Between Groups (df = 1, 45)

2 vs 3	F = 2.15	N.S.
2 vs 4	F = 5.88	P .05
2 vs 5	F = 21.93	P .01
2 vs 6	F = 52.59	P .01
3 vs 4	F = .92	N.S.
3 vs 5	F = 10.35	P .01
3 vs 6	F = 33.49	P .01
4 vs 5	F = 5.10	P .05
4 vs 6	F = 23.30	P .01
5 vs 6	F = 6.60	P .05

first stage of analysis involved calculating five indices which have been extensively used in measuring primary language acquisition. Four of the five measures -- clause length, subordination ratio, T-unit length, and sentence length -- detected significant differences between groups. Thus, these findings indicate that developmental stages in the acquisition of written German syntax did exist in this study and that these stages were most clearly definable between every other level.

The second stage of analysis consisted of measuring the rate of occurrence of four syntactic structures in randomly selected T-units. Most of the structures were sentence-embedding constructions. Nominals and coordinates and the totals of the four structures increased significantly between groups. These findings, too, point to the presence of developmental stages.

The broadness of the five indices made comparisons feasible between first and second language acquisition studies. When compared with younger English speakers, the adult second language learners in the present study exhibited more rapid growth in syntactic development in the space of fewer years and closely approached or surpassed norms established by Hunt's 12th grade students. Similarity of developmental stages was present in so far as the second langauge learners attained a comparable level of syntactic growth reached by representative English speakers. This finding is relevant for instructors of college German students. Too often students are easily discouraged by the fact that the simplest German sentences are difficult to produce. Although they

initially may have a small syntactic repertoire, college students can be assured that within a few years they will make rapid gains and approach or surpass levels of syntactic competence reached by Hunt's English students.

The findings also add an interesting dimension to recent discussions about the nature of primary and second language acquisition. Scholars have stressed the fact that primary language learning is rule-governed behavior. The following statement by Brown and Bellugi is representative of this mode of thinking.

> All children are able to understand and construct sentences they have never heard but which are nevertheless well-formed ... in terms of general rules that are implicit in the sentence the child has heard. Somehow, then, every child processes the speech to which he is exposed so as to induce it from a latent structure. ...the discovery of latent structure is the greatest of the processes involved in language acquisition.[13]

Newmark and Reibel suggest that adults also possess the ability to discover latent grammatical structure when learning a second language. They state that while adults may exhibit imperfect mastery of the phonology, morphology, and syntax of a second language, they still are able "to infer general linguistic laws from particular instances."[14] In other words, it cannot be maintained that an adult is no longer able to make the same kind of linguistic generalizations in learning a second language that he was capable of doing when acquiring his mother

tongue. The difference may be quantitative but not qualitative.[15]

In the present study, the process of acquisition of written syntax is too rapid and the level or stage reached is too high to be explained in terms of habit formation whereby new syntactic patterns are added in a cumlative manner to previous simpler patterns. Instead, the students' performance level may be due to an innate ability to rapidly and automatically internalize the basic rules of German syntax. This process may, indeed, be similar to the manner in which children learn their mother tongue.

Syntactic maturity as measured in the present study consists of the writer's ability to pack more information into sentences and T-units by lengthening independent clauses and by using more subordination. Both processes can be grammatically described as sentence-embedding. Mature writers are able to exercise more options in their compositions, for they are more aware of syntactic alternatives.

Modified sentence-combining practice might prove to be an interesting and efficient way of hastening syntactic development in German. A model passage of prose could be used as the point of departure for such practice. Students could begin by breaking down the sentences of the prose passage into T-units. The constituent T-units could then be divided into underlying kernel sentences.

Finally, the students could recombine the kernel sentences in an effort to reproduce the model passage. Students would benefit from this type of writing practice, for they would soon realize that more complex syntactic units are composed of smaller, simpler constituent parts.

Footnotes

[1]Eric H. Lenneberg, Biological Foundations of Language (New York: John Wiley and Sons, 1967); David McNeill, The Acquisition of Language, the Study of Developmental Psycholingistics (New York: Harper and Row, 1970); Aaron Bar-Adon and Werner F. Leopold, Child Language, a Book of Readings (Englewood Cliffs, New Jersey: Prentice-Hall, 1971).

[2]Roar Ravem, "Language Acquisition in a Second Language Environment," International Review of Applied Linguistics in Language Teaching, Vol. 6 (May, 1968), pp. 175-85.

[3]Ibid., pp. 184-85.

[4]Donald E. Thornhill, "A Quantitative Analysis of Syntactical Fluency of Four Young Adult Speakers Learning English" (unpubl. diss., The Florida State University, 1969).

[5]Ibid., p. 22.

[6]Ibid., pp. 88, 97.

[7]Thomas C. Cooper and Lena Madison, "Some Aspects of Syntactic Development in Second Language Acquisition" (unpubl. paper, The Florida State University, 1971).

[8]Kellogg W. Hunt, Grammatical Structures Written at Three Grade Levels, National Council of Teachers of English Research Report No. 3 (Champaign, Ill.: National Council of Teachers of English, 1965).

[9]K.W. Hunt, "Recent Measures in Syntactic Development," in Readings in Applied Transformational Grammar, ed. by Mark Lester (New York: Holt, Rinehart and Winston, Inc., 1970), p. 197.

[10]Hunt, Grammatical Structures, p. 89.

[11]Ibid., p. 103.

[12]Walter F.W. Lohnes and F.W. Strothmann, German, A Structural Approach (New York: W.W. Norten and Co., 1967), pp. 490-97.

[13]Roger Brown and Ursula Bellugi-Klima, "Three Processes in the Child's Acquisition of Syntax," in Child Language, A Book of Readings, ed. by Aaron Bar-Adon and Werner F. Leopold (Englewood Cliffs, New Jersey: Prentice-Hall, 1971), pp. 314-15.

[14]L. Newmark and D.A. Reibel, "Necessity in Language Learning," International Reveiw of Applied Linguistics in Language Teaching, Vol. 6 (May, 1968), p. 154.

[15]Ibid., p. 155.

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